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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/637,520	08/10/2000	Thomas Michael Walley	10001892-1	7579

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AGILENT TECHNOLOGIES, INC.
INTELLECTUAL PROPERTY ADMINISTRATION, LEGAL DEPT.
P.O. BOX 7599
M/S DL429
LOVELAND, CO 80537-0599

EXAMINER	
KIBLER, VIRGINIA M	
ART UNIT	**PAPER NUMBER**
2623	

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/637,520	WALLEY ET AL.	
	Examiner	Art Unit	
	Virginia M Kibler	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-20* is/are rejected.

7)☒ Claim(s) *16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment received on 3/25/04 has been entered. Claims 1 and 3-20 remain pending.

Claim Objections

2. Claim 16 is objected to because of the following informalities: claim 16 is dependent on canceled claim 2. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 20 is rejected under 35 U.S.C. 102(e) as being anticipated by Raynal et al. (6,643,389).

Regarding claim 20, Raynal et al. ("Raynal") discloses a method of imaging an object including capturing movement information of an object by using a navigation sensor array 19 (Col. 3, lines 48-60) and a navigation engine 27 (Col. 4, lines 7-15), based on the movement information determining when to capture a sub-image of the object by using an imaging sensor

array having a plurality of pixels for imaging a portion of the object at one time (Col. 3, lines 31-47), successively capturing a plurality of sub-images by using an imaging sensor array as the object moves with respect to the imaging sensor array (Col. 4, lines 27-29), and generating a composite image of the object based on the captured portions of the object by sing a processor-based application (Col. 5, lines 38-47), wherein the single sensor chip is integrated with the navigation engine and the navigation sensor array (Col. 4, lines 30-32).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 3-5, 9-12, 15, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (6,643,389) as applied to claim 1 above, and further in view of Bohn et al. (6,207,945).

Regarding claim 1, Raynal discloses a fingerprint imager for capturing an image of a fingerprint including a single sensor integrated circuit having an imaging array 13 having a plurality of sensors arranged along a first axis (Figures 1 and 2) for capturing a sub-image of the fingerprint at one time (Col. 3, lines 31-37), wherein the fingerprint is moved with respect to the imaging array in a direction that is generally perpendicular to the first axis (Col. 3, lines 48-50; Figures 1 and 2) and a mechanism 19 for determining a change in the position of the fingerprint with respect to time and controlling the image capture of the imaging array (Col. 4, lines 7-14).

Raynal discloses a navigation sensor 19 for capturing navigation information of a portion of the fingerprint as the fingerprint moves with respect to the navigation sensor and a navigation circuit 27, coupled to the navigation array, for controlling when the navigation array captures navigation information for receiving the information and based thereon for determining the amount of movement of fingerprint (Col. 4, lines 1-14). Raynal discloses obtaining movement information but does not specify capturing images or determining the amount of movement along a first and second axis. However, Bohn et al. ("Bohn") discloses including an imaging array 120 as well as a navigation array 130, 132 and navigation circuit 150 (Figures 2 and 5) in an imaging device wherein the navigation array captures navigation images (Col. 12, lines 42-44) and the navigation circuit determines the amount of movement along a first axis and a second axis that is perpendicular to the first axis (Col. 12, lines 1-4 and lines 17-31). Raynal and Bohn are combinable because they are from similar problem solving area of capturing an image. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the navigation array and navigation circuit disclosed by Raynal to include capturing images and determining movement information along a first and second axis. The motivation for doing so would have been because it provides greater accuracy in determining the relative movement between the object and the imager. Therefore, it would have been obvious to combine Raynal with Bohn to obtain the invention as specified in claim 1.

Regarding claim 3, Raynal does not appear to recognize the imaging array and the navigation array sharing at least one sensor. However, Bohn teaches that it is known for the imaging array and the navigation array to share at least one sensor (Figure 7; Col. 14, lines 10-14). At the time of the invention, it would have been obvious to a person of ordinary skill in the

art to have modified the imaging array and the navigation array disclosed by Raynal to include sharing at least one sensor. The motivation for doing so would have been because it allows the navigation array to be integrated into the imaging array thereby reducing the size of the imager and alleviating problems associated with locating the navigation sensors a distance from the imaging array (Col. 8, lines 45-53). Therefore, it would have been obvious to combine Raynal with Bohn to obtain the invention as specified in claim 3.

Regarding claim 4, Raynal discloses the imaging array 13 separate from the navigation array 19 (Figure 1).

Regarding claim 5, Raynal discloses a plurality of sensors of the imaging array is capacitive-type sensors (Col. 3, lines 38-47). Raynal does not disclose the type of plurality of sensors of the navigation array. However, Bohn discloses the navigation array including a plurality of optical-type sensors (Col. 8, lines 30-53). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the mechanism for determining a change in the position of the fingerprint disclosed by Raynal to include specifying a type of the plurality of sensors of the navigation array. The motivation for doing so would have been because the types of sensors are well known in the art and routinely utilized for navigation. Therefore, it would have been obvious to combine Raynal with Bohn to obtain the invention as specified in claim 5.

Regarding claim 9, Raynal discloses the finger being moved along a physical surface (Col. 3, lines 48-50).

Regarding claim 10, Raynal does not appear to specify the pixel size of the sensors of the imaging array is different from the navigation array. However, it would have been an obvious

matter of design choice to specify different pixel size of the sensors in both the imaging array and the navigation array because it is well known in the art to choose pixel size according to the precision needed.

Regarding claim 11, Raynal discloses the pixel size of the sensors of the imaging array having the dimensions of about 50 microns (Col. 3, lines 38-47), but does not specify the pixels of the sensors of the navigation array having dimensions of about 20 microns. However, it would have been an obvious matter of design choice to specify the pixel size of the sensors in the navigation array having smaller dimensions because it will yield higher precision in determining the change in position.

Regarding claim 12, Raynal discloses the resolution of the sensors of the imaging array and the navigation array is about 500 dpi (Col. 3, lines 38-60).

Regarding claim 15, Raynal discloses employing the change in position to selectively control when the imaging array captures the sub-images (Col. 4, lines 1-14), thereby an imaging array strobe generator. Raynal further discloses receiving the sub-images and the movement information for each sub-image relative to a previous sub-image and based thereon generates a composite image of the fingerprint (Col. 5, lines 37-46) and analyzing the composite image to generate minutia and compares the generated minutia to previously stored minutia (Col. 4, lines 30-39), and grants access to a resource if the generated minutia matches one of the previously stored minutia (Col. 1, lines 13-19). Raynal does not appear to specify including a processor. However, Bohn teaches that it is known to include a processor to generate a composite image of the object based on the sub-images and the movement information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the

generation of composite image disclosed by Raynal to include using a processor. The motivation for doing so would have been because it is well known in the art to use stitching software to create an electronic image of the object. Therefore, it would have been obvious to combine Raynal with Bohn to obtain the invention as specified in claim 15.

Regarding claim 17, Raynal discloses a rectangular imaging array sensor (Col. 3, lines 28-47). While Raynal does not specify using a 1 by N sensor array, it would have been obvious in light of Raynal's disclosure to have modified the rectangular sensor array to a 1 by N sensor array because it require less space and thereby minimize the size.

Regarding claim 18, Raynal does not appear to disclose a P by Q navigation sensor array. However, Bohn discloses a navigation array as a P by Q sensor array (Col. 8, lines 38-42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the mechanism for determining a change in the position disclosed by Raynal to include a P by Q navigation sensor array because it allows for the change in position to be detected in two directions.

Regarding claim 19, Raynal discloses an imager for capturing an image of an object 17 including a surface having an axis (Figure 1), wherein the object is moved in a first direction relative to the axis of the surface, an imaging sensor array having a plurality of sensors arranged along a first axis for imaging a portion of a fingerprint at one time in response to an asserted imaging sensor array signal (Col. 3, lines 33-47; Col. 4, lines 1-14), and a navigation sensor for obtaining movement information of the object in response to an asserted navigation sensor array strobe signal (Col. 3, lines 48-60; Col. 4, lines 1-14) wherein the imager is integrated in a single chip (Col. 4, lines 30-39). Raynal does not appear to recognize a navigation circuit for receiving

images and determining the amount of movement in a first and second direction. However, Bohn teaches that it is known to include an imaging array 120 as well as a navigation array 130, 132 and navigation circuit 150 (Figures 2 and 5) in an imaging device wherein the navigation array captures navigation images (Col. 12, lines 42-44) and the navigation circuit determines the amount of movement along a first axis and a second axis that is perpendicular to the first axis (Col. 12, lines 1-4 and lines 17-31). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the navigation array and navigation circuit disclosed by Raynal to include capturing images and determining movement information along a first and second axis. The motivation for doing so would have been because it provides greater accuracy in determining the relative movement between the object and the imager. Therefore, it would have been obvious to combine Raynal with Bohn to obtain the invention as specified in claim 19.

7. Claims 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (6,643,389) and Bohn et al. (6,207,945) as applied to claim 1 above, and further in view of Akizuki (6,360,004).

Regarding claim 13, Raynal does not appear to recognize the imager as a stand-alone unit. However, Akizuki teaches that it is known to implement a fingerprint sensor as a touch pad, or a stand-alone unit, wherein the fingerprint imager further comprises a capacitive sensor (Col. 2, lines 62-67) having a surface along which a finger is moved 4 and an assembly for housing the capacitive sensor (Col. 2, lines 17-20). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the imager disclosed by Raynal and Bohn to be implemented as a stand-alone unit. The motivation for doing so would

have been because it is suitable for portable use. Therefore, it would have been obvious to combine Raynal and Bohn with Akizuki to obtain the invention as specified in claim 13.

Regarding claim 14, the arguments analogous to those presented above for claim 13 are applicable to claim 14. Note, Akizuki discloses a touch pad, thereby a PC peripheral.

Regarding claim 16, the arguments analogous to those presented above for claim 13 are applicable to claim 16. Akizuki discloses a processor 5 (Figure 1) and a cursor control software which when executing on the processor receives the movement information from the navigation engine and uses the movement information to control the cursor (Col. 3, lines 47-51). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the imager disclosed by Raynal and Bohn to include the cursor control. The motivation for doing so would have been because it provides a dual function thereby eliminating the need for two separate sensors. Therefore, it would have been obvious to combine Raynal and Bohn with Akizuki to obtain the invention as specified in claim 16.

8. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raynal et al. (6,643,389) and Bohn et al. (6,207,945) as applied to claim 1 above, and further in view of Brownlee (6,282,303).

Regarding claim 6, Raynal does not recognize a stand-alone unit including optics. However, Brownlee teaches that it is known to include a fingerprint imager implemented in a stand-alone unit 910 in Figure 9 (Col. 2, lines 28-29) including optics for focusing light onto the surface (Abstract, lines 3-5) and an optics assembly 211 for housing the optics (Figure 2). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the fingerprint imager disclosed by Raynal and Bohn to a stand-alone unit including

optics. The motivation for doing so would have been because it is well known in the art and provides a compact device suitable for portable use. Therefore, it would have been obvious to combine Raynal and Bohn with Brownlee to obtain the invention as specified in claim 6.

Regarding claim 7, the arguments analogous to those presented above in claim 6 are applicable to claim 7. Note, Brownlee discloses the fingerprint imager implemented in a PC peripheral (Figure 9).

Regarding claim 8, the arguments analogous to those presented above for claim 7 are applicable to claim 8. Brownlee discloses the PC peripheral device as a mouse, thereby a cursor pointing device (Figure 9).

Response to Arguments

9. Applicant's arguments filed 3/25/04 have been fully considered but they are not persuasive.

Summary of Applicant's Arguments: Raynal does not disclose a plurality of sensors arranged along a first axis for capturing a sub-image of the fingerprint at one time as claimed in claim 1. The mouse 19 does not fairly teach or suggest the navigation array as claimed. The mouse does not appear to use any sensors, but only uses the rotation of the member to measure the speed of the finger. It would not have been obvious to modify Raynal's rectangular sensor array 13 into a 1xN array as claimed in claim 17. The Raynal and Bohn references are very different approaches to very different problems. Raynal is directed to a fingerprint imager and Bohn is directed to an imaging device. The applicant submits that the claimed invention has

been improperly used as an instruction manual or template to piece together the teachings of the Raynal reference and the Bohn reference.

Examiner's Response: Raynal discloses a plurality of sensors arranged along a first axis for capturing a sub-image of the fingerprint at one time as recited in claim 1. While Raynal discloses a rectangular array of sensors (Figure 2), it still meets the claimed language of "a plurality of sensors arranged along a first axis for capturing a sub-image of the fingerprint at one time; wherein the fingerprint is moved with respect to the imaging array in a direction that is generally perpendicular to the first axis." The rectangular array of sensors provides a plurality of sensors arranged along a first axis as well as a second axis. The claim language does not exclude a rectangular array. Regarding claim 20, Raynal's mouse device 19 would inherently include a navigation sensor array in order to detect both finger movement speed and direction information (Col. 3, lines 48-60). It is further submitted that modifying the size of a rectangular array is well known in the art and a routinely utilized design parameter. Raynal and Bohn are combinable because they are from similar problem solving area of capturing an image. The teachings of Bohn are relied on for the navigation of the imaging device. The combined teachings of Raynal and Bohn in the same environment of imaging meet the claimed language recited in claims 1 and 19. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's

disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

10. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Virginia M Kibler whose telephone number is (703) 306-4072. The examiner can normally be reached on Mon-Thurs 8:00 - 5:30 and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Virginia Kibler
4/30/04

MEHRDAD DASTOURI
PRIMARY EXAMINER